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LONGITUDINAL PATTERNS IN THE DURATION OF UNEMPLOYMENT INSURANCE CLAIMS IN CANADA

by

Miles Corak

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ABSTRACT

The purpose of this paper is to examine the hypothesis of occurrence dependence in the duration of unemployment insurance claims. This hypothesis suggests that the past occurrence of a spell of insured unemployment alters, in a structural way, the duration of future spells. Canadian administrative data that cover the period from mid 1971 to early 1990 are used. Descriptive statistics suggest that successive spells for an individual are on average longer in length, and formal tests strongly reject the null of no occurrence dependence. This suggests that an individual's labour force history may influence his or her future.

KEYWORDS: UNEMPLOYMENT, UNEMPLOYMENT INSURANCE, OCCURRENCE DEPENDENCE, CANADA

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1. INTRODUCTION

The relationship between the receipt of unemployment insurance and individual labour market behaviour has been the subject of much inquiry. Beach and Kaliski (1983), Ham and Rea (1987), Keil and Symons (1990), Moorthy (1989-90), and Phipps (1990a,1990b) represent some of the more recent studies that have addressed issues dealing with this relationship in the Canadian context, while Grubel, Maki and Sax (1975), Green and Cousineau (1976), Kaliski (1976), Lazar (1978), and Rea (1977) are examples of earlier studies that are motivated, in part, by the substantial reform of the Canadian program in 1971.

This literature might be characterized as dealing with the "static disincentives" associated with unemployment insurance, meaning the incentives associated with labour supply decisions at a point in time. Some typical research issues from this perspective include the following: how does the unemployment insurance system affect the probability that an individual will become unemployed; how does it influence the duration of individual spells of unemployment; what are the implications of changes in spell incidence and duration for the level and dynamics of the aggregate unemployment rate? Standard neoclassical models of labour supply, and search models of the duration of unemployment generally form

the theoretic backdrop.

However, these theories also have implications that are longitudinal in nature. For example, static neoclassical models of individual labour-leisure choice require the analyst to make some assumptions concerning the time horizon over which the decision process occurs. Much of the existing literature implicitly, and in some cases explicitly, adopts an annual horizon. If an individual decides to participate in the unemployment insurance program in any given year for a particular length of time, and if preferences and constraints are stable, then, abstracting from life-cycle considerations, he or she will participate for the same length of time in the next and in all succeeding years. Fortin (1984), and Milbourne, Purvis, and Scoones (1991) outline models that have such implications. It is the generosity of the program, in combination with heterogeneity in the preference for employment across the population, that leads to repeat U.I. use.

The theory of temporary lay-offs proposed by Feldstein (1976) would also suggest that unemployment insurance, if it is less than perfectly experience rated, will generate a great deal of repeat claims. Further, if preferences and constraints are stable through time, this pattern of behaviour should also lead to a series of unemployment spells for the individual that are, on average, of equal length.

There is little Canadian work that addresses the interaction

between unemployment insurance and the labour market from a longitudinal perspective. Glenday and Jenkins (1981a, 1981b), Magun (1982), and Corak (1992a, 1992b) are some exceptions. This work has documented what would appear to be considerable repeat usage of the Canadian unemployment insurance program.

The present paper begins by briefly summarizing some of these results, in particular the work of Corak (1992a) where the suggestion is made that about 80 per cent of U.I. claimants in any given year have had a claim at some point in the past. The focus of the analysis in the body of the paper is upon the duration of successive spells. In particular an attempt is made to model successive U.I. spell durations in order to assess the notion of "occurrence dependence," as it has been put forward by Heckman and Borjas (1980). Our application of this idea leads to the hypothesis that the occurrence of an unemployment insurance claim alters, in a structural manner, the duration of future claims. This is equivalent to suggesting that the model determining the duration of a U.I. spell is not stable across successive spells, and that an individual's labour force history is thus a determinant of his or her future.

The attempts that have been made in the literature to examine occurrence dependence have been restricted to the dynamics of unemployment. There have been no analyses of occurrence dependence in the use of unemployment insurance. Ellwood (1982) is concerned with the longer term consequences of unemployment that has occurred

early in the careers of a sample of U.S. male teenagers. He finds that his data "provide no evidence that early unemployment sets off a vicious cycle of recurrent unemployment." (p.350) Ruhm (1991) reaches a similar conclusion in a study of the long term consequences of job displacement. Both of these studies use a similar methodology, which has been criticized by Willis (1982). Heckman and Borjas (1980:272-79) offer results of an examination of occurrence dependence in the employment and unemployment dynamics of a sample of U.S. high school graduates. They also reach the conclusion that there is no evidence for its existence, but temper this by the fact that their sample is rather small, ranging from 33 to 50 observations, and covers a panel of only 30 months. (1980:279)

In contrast, our results cannot reject the hypothesis of occurrence dependence. Further, we find that on average individuals collect more weeks of U.I. benefits with each subsequent claim. The major implication of these results is to suggest that at least one of the longitudinal implications of static neoclassical models, namely that successive U.I. spells should be of the same length, is not supported by the data. As a result the interaction between individual labour market behaviour and the unemployment insurance system cannot be understood solely in terms of the static disincentives, but must incorporate notions of life-cycle labour supply or history. Some suggestions in this regard are made in the concluding section of the paper. In particular it is suggested that the experience of having received U.I. benefits in the past erodes,

in some sense, any stigma attached to their receipt.

2. A PRELIMINARY ANALYSIS

Participation in the Canadian unemployment insurance system is characterized by considerable repeat use. Figures 1a and 1b, which are taken from Corak (1992b), present the distribution of the total number of U.I. claims beginning in each year since 1971 by gender, and the sequence number of the claim. The sequence number is the rank, from first to last, of a given claim in an individual's post 1971 history of claims.[1]

Since the first year of available data is 1971, all claims during that year are categorized as first claims. By the late 1980s, however, a stable pattern appears in the distribution, especially in the case of males. For example, Figure 1a reveals that during 1989 only 17.7 per cent of the claims that were initiated were done so by first time claimants. Fully 80 per cent of the claims were made by individuals that had been U.I. claimants at some point since 1971. In fact, almost 47 per cent of the male claimants in 1989 were beginning their 5th or higher claim. There is a clear increase in the fraction of first time claimants

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[1] The data used to develop these figures are drawn from the administrative data associated with the operation of the Canadian Unemployment Insurance system. They represent a systematic one-in-100 sample of all claims filed at any point between July, 1971 to about March 1990, the start date corresponding to enactment of a substantial reform. Even though each record in the sample represents a U.I. claim, all of the claims made by a particular individual are captured. The sample consists of 363,531 claims made by 121,724 individuals. These are organized by individual according to the date at which they began.

Figure 1a

Claim Sequence Number by Year, Males, 1971-89

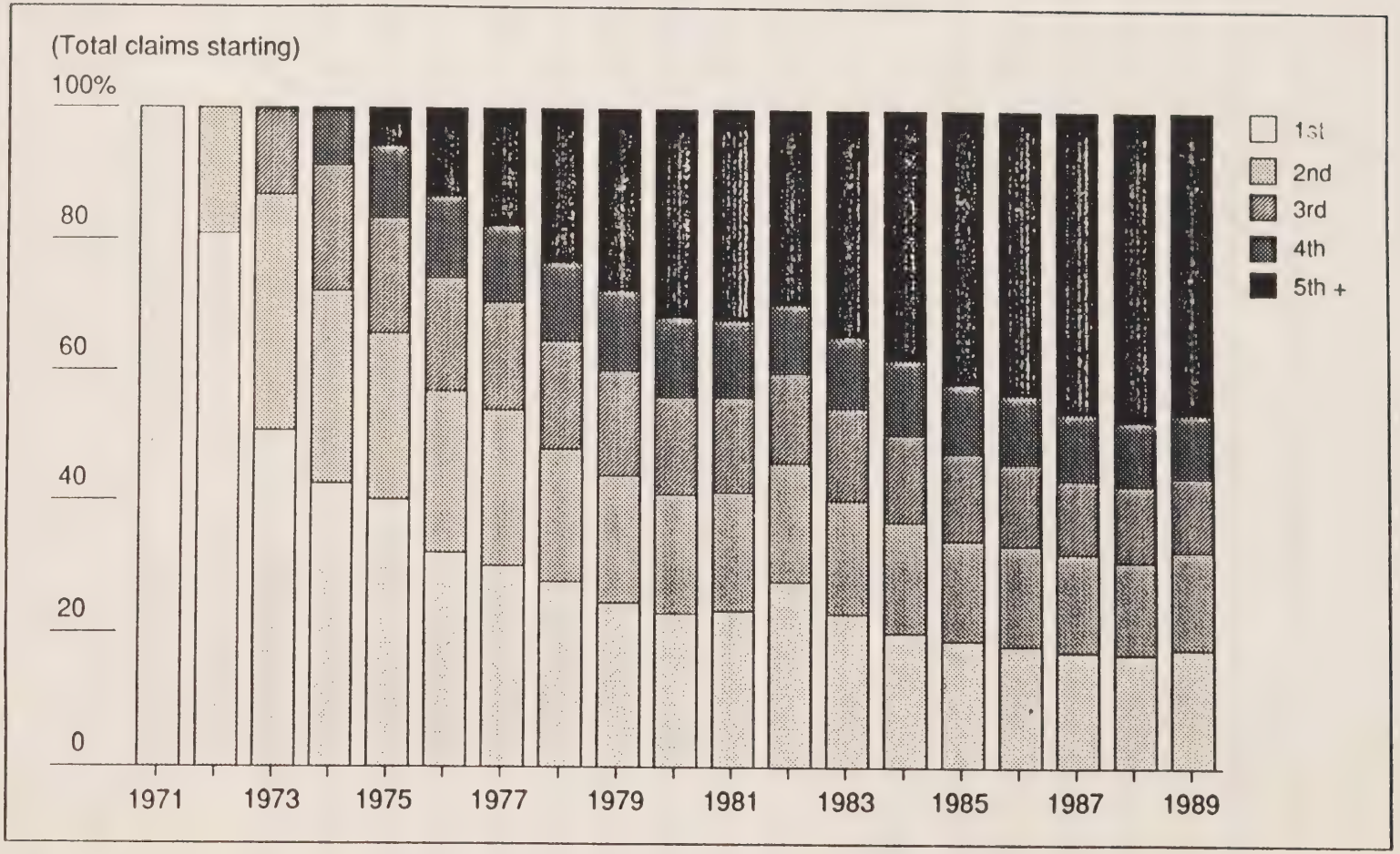

Chart 6/03/91#

associated with the 1982 recession, but with time participation in the unemployment insurance system has settled into an equilibrium in which there is considerable repeat use. Once an individual makes an unemployment insurance claim the chances that he will experience another claim at some point in the future seem to be very high.

Figure 1b illustrates that the pattern is different for females. The extent of repeat use does not appear to be as great. Even so it is significant. During 1989 only 23 per cent of claimants were first time claimants. Further, the distribution does not appear to have settled into a steady state to the same extent as the male distribution. In all likelihood the extent of repeat use will continue to increase for females, especially for the 5 claims and higher group. The different patterns displayed in Figures 1a and 1b call for separate analyses between the genders.

Our analysis is based upon a subset of the data underlying these figures, and consists of all regular or fishing claims made by individuals with at least two claims over the entire period. This latter restriction is imposed in order to analyze the duration of successive claims.

The possibility that successive U.I. spells become longer and longer is present in the data. Table 1 offers the average spell durations, for two alternative definitions of a U.I. spell, by sequence number and gender. The two definitions are: the number of weeks of benefits collected during the claim, and the actual length

Figure 1b

Claim Sequence Number by Year, Females, 1971-89

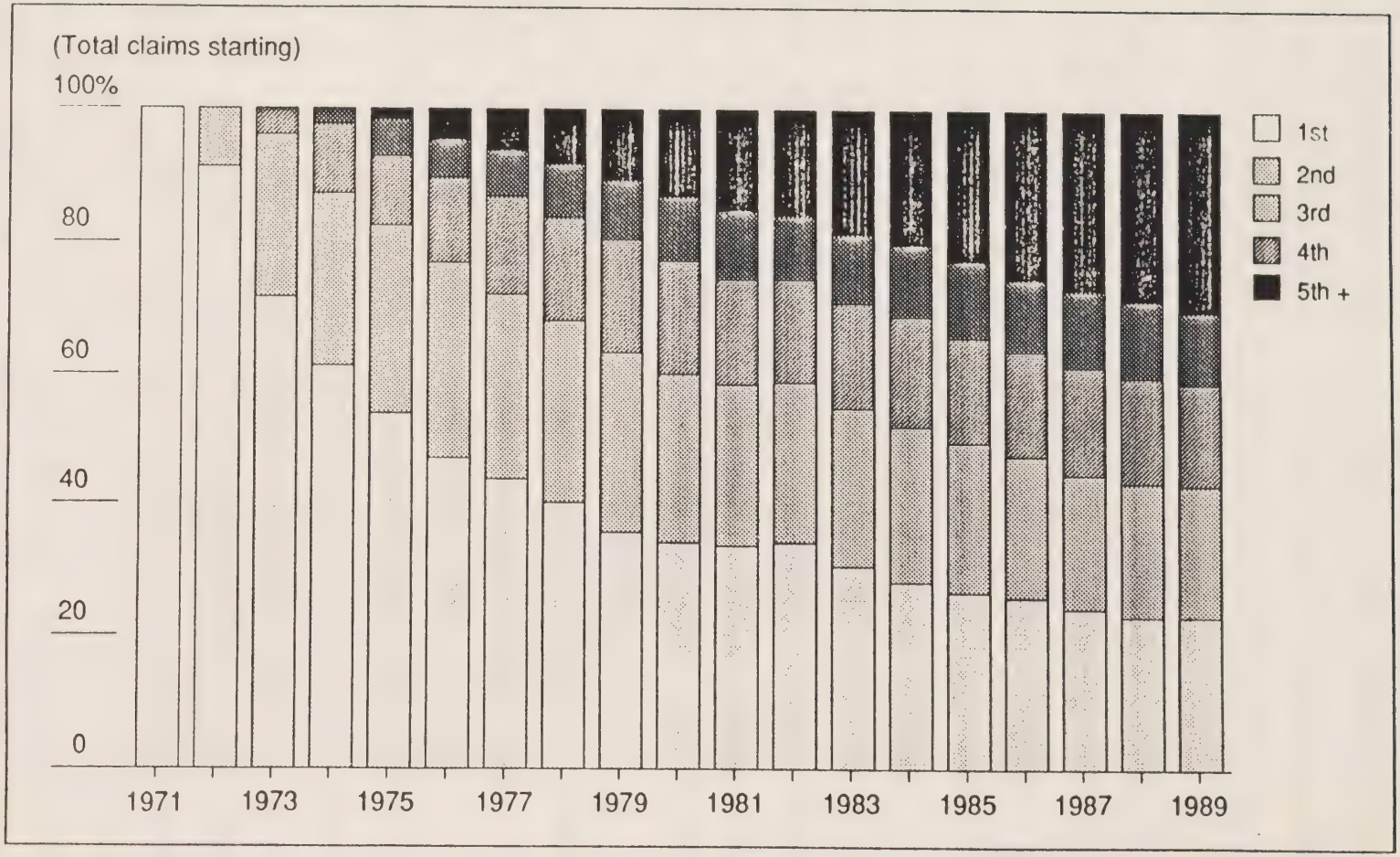

Chart 7/03/91#

Table 1
AVERAGE UNEMPLOYMENT INSURANCE SPELL DURATIONS:
BY SEQUENCE NUMBER AND SPELL TYPE

Spell Sequence Number	Sample Size	Benefit Weeks Paid	Claim Duration
1. Male Subsample			
1	36,891	19.8	28.2
2	28,093	20.6	29.9
3	20,206	21.7	32.7
4	14,748	22.8	34.0
5	10,924	23.4	35.4
All Spells	142,912	21.8	32.2
2. Young Male Subsample			
1	14,993	22.9	32.4
2	10,128	23.7	33.8
3	6,867	24.2	35.2
4	4,630	25.0	36.6
5	3,205	25.2	37.4
All Spells	46,290	24.0	34.6
3. Female Subsample			
1	32,368	21.3	28.2
2	20,328	22.8	30.6
3	12,189	23.9	32.9
4	7,540	24.8	34.9
5	4,763	25.2	36.0
All Spells	87,106	23.0	31.5
4. Young Female Subsample			
1	12,001	22.4	30.5
2	6,905	24.1	32.8
3	3,732	25.3	35.0
4	2,104	26.5	36.6
5	1,188	27.0	37.5
All Spells	27,586	24.0	32.9

of the claim. These may differ because individuals may work while on claim, collect no benefits, and then return to collect any remaining benefits. Both definitions are used since it is not immediately apparent which is best suited for the present purposes. Indeed, other definitions of U.I. spell duration are possible.[2]

Also presented are the averages for a sample of "young" males and females, defined to consist only of those claims for individuals that were less than 17 years of age in 1971. This sample is used in order to ensure that the complete history of an individual's interaction with the U.I. system is captured. As noted the sequence numbers count only the number of occurrences of U.I. claims since 1971. They sequence, therefore, the number of claims made under the U.I. system as defined by the 1971 Act and all of the subsequent amendments to it, not the total number of claims ever made under the Canadian U.I. program. Defining a subsample of the young, who could not have been labour force participants before the new program came into being, ensures that the entire U.I. history of the individual is included in the analysis.

For both genders, and for both definitions of spell duration, the average duration increases with sequence number. First time male U.I. claimants receive on average 19.8 weeks of benefits, and

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[2] Corak (1991), for example, offers an analysis of spell durations from a similar data set that employs a measure in which spells are defined to end with the first week in which the individual earns sufficient employment income to reduce benefit payments to zero. (Claimants are permitted to earn up to 25 per cent of their weekly benefits without penalty, but benefits are reduced dollar for dollar once earnings exceed this limit.) Ham and Rea (1987) use a definition that corresponds as closely as possible to an unemployment spell. In their formulation a single U.I. claim may contribute several unemployment spells.

their claims last about 28.2 weeks. Their female counterparts experience durations of 21.3 and 28.2 weeks. These figures are about four and seven weeks longer for males experiencing their fifth claim, and about four and eight weeks longer for females. Young males have spells that tend to be longer than the entire sample of males, but the pattern of longer spells with higher sequence numbers is just as evident. First time young male claimants collect 22.9 weeks of benefits on average, and experience claims with an average length of 32.4 weeks. These figures are 25.2 and 37.4 weeks for the fifth claim. The average spell durations of young females, however, is not too different from the overall female sample. Benefit weeks paid increase from 22.4 weeks for first claims to 27.0 weeks for fifth claims, while claim durations increase form 30.5 weeks to 37.5 weeks.[3]

3. OCCURRENCE DEPENDENCE IN THE DURATION OF U.I. SPELLS

In this section the following question is addressed: does past participation in the unemployment insurance system influence the duration of future U.I. spells? This is a question that concerns a particular form of state dependence in labour market behaviour,

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[3] The finding that the young generally have longer U.I. spells than the old is in contrast with the general view concerning the duration of unemployment spells. It has, for example, been observed that the young have shorter unemployment spells than the old. See Beach and Kaliski (1987) and Corak (1990). That the opposite seems to be the case in our data reflects, most likely, the patterns of usage of the U.I. program. Young U.I. claimants are more likely to take jobs that are short or part-time in nature and then return to their claims to collect any outstanding benefits. This would both increase the duration of the claim and the number of weeks of benefits paid. Older individuals may be more inclined to search for more permanent/career jobs. Once found they might tend to let any remaining entitlement on a claim lapse.

that has been called "occurrence dependence" by Heckman and Borjas (1980).

They define "state dependence" as a situation in which history in some structural way influences current labour market outcomes, and offer a taxonomy of three different types: (1) duration dependence, in which the probability of leaving a labour force state depends upon the elapsed time spent in that state; (2) lagged duration dependence, in which the probability of leaving a state depends upon the length of previous spells in that or any other state; and (3) occurrence dependence, in which the probability of leaving a state depends upon the number of past spells in that or any other labour force state. Heckman and Borjas argue that it is not a simple task to distinguish state dependence from a model based upon heterogeneity of individual characteristics because important elements of the latter may be unobservable to the analyst. They outline the conditions under which each of the three types of state dependence are identifiable, and conclude that occurrence dependence requires the least restrictive set of assumptions.

It is interesting to note that in spite of this conclusion a great deal of attention has been devoted to the study of duration dependence. One particularly relevant example is Ham and Rea (1987). They use the same data set we do to examine the duration of time spent on U.I. by Canadian males focusing upon duration dependence, and to a slightly lesser extent, lagged duration

dependence. Occurrence dependence has not been examined with Canadian data.

Heckman and Borjas' framework can be applied to our concerns in two related ways. The first argues that each occurrence of a U.I. claim increases the probability of another occurrence. This entails an analysis of the length of time between successive U.I. claims. The second argues that each occurrence of a U.I. claim increases the length of future occurrences, and entails an analysis of the duration of successive claims.

Thus, the identification of occurrence dependence requires observations on multiple spells within a particular labour force state. While the data that we employ covers a very long horizon, its major drawback has to do with the fact it does not contain complete information on how the time between U.I. claims is spent. The beginning and end of all U.I. claims experienced over the sample period can be accurately dated. Therefore it is possible to examine whether each occurrence of a claim increases the length of future claims. However, the data offers only a limited amount of information on the time spent before the beginning of the first claim or after the end of the last claim.[4] For this reason we

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[4] There is no information on when individuals entered the labour force and hence how long they spent in search of employment or employed before beginning their first claim. Similarly, there is no information on the activities of individuals after the end of the last recorded U.I. claim. Thus to obtain an accurate dating of at least two bouts of time between U.I. claims would require that the individual experience at least three claims over the sample period. Imposing such a requirement would likely introduce a sample selection bias into an analysis of whether each occurrence of a claim increases the likelihood of having another claim.

focus upon occurrence dependence in the duration of claims.

The test that Heckman and Borjas use is based upon the argument that if occurrence dependence is present the distribution of unemployment spells should be different according to the sequence number of the spell. Tests may be formulated around various moments of this distribution. A test of "mean occurrence dependence" is a test of whether the mean durations of spells varies with the sequence number of the spell.

We consider their test for occurrence dependence for a sample collected from a non-stationary environment, which, given the fluctuations of the business cycle and changes in U.I. legislation over the 19 years that our data cover, is the most relevant. In a non-stationary environment the observed and unobserved determinants of spell duration must be controlled for. Let t index the duration of a spell and n index the sequence number. Let $t^n = \exp(\mathbf{X}^n\beta^n + R^n)$, where $\mathbf{X}^n$ is a row vector representing the observable individual characteristics determining spell duration, and R^n represents the unobservable determinants. The exponentation is needed since spell durations cannot be less than zero in length. A log-linear formulation, $\ln t^n = \mathbf{X}^n\beta^n + R^n$, is valid if the sample contains only completed spell durations, and there are no time-varying co-variates. (Heckman and Borjas, 1980:270-72) Occurrence dependence is said to exist if $\beta^n \neq \beta^{n+1}$, that is if the same characteristics have different impacts upon the duration of spells according to sequence number. The determinants of the conditional mean of spell

durations has changed because of the past occurrence of the state.

The conditional mean may well change if $\mathbf{X}^n \neq \mathbf{X}^{n+1}$, but as long as these changes are exogenous to the process, that is not a result of the occurrence of past spells, then no special problem is posed. However, $R^n \neq R^{n+1}$ may also be the cause of changes in the mean spell duration in a way that is equivalent to changes in β. Heckman and Borjas formulate a test of mean occurrence dependence on the basis of first differences in successive spell durations:

$$\ln t^{n+1} - \ln t^n = \mathbf{X}^{n+1}\beta^{n+1} - \mathbf{X}^n\beta^n + R^{n+1} - R^n \qquad (1)$$

Adding and subtracting $\mathbf{X}^n\beta^{n+1}$ to the left hand side of equation (1) yields:

$$\ln t^{n+1} - \ln t^n = \beta^{n+1}\Delta\mathbf{X} + (\beta^{n+1}-\beta^n)\mathbf{X}^n + R^{n+1} - R^n \qquad (2)$$

A test of the null hypothesis of no mean occurrence dependence may be formulated as a test of the null that the coefficients on the $\mathbf{X}^n$ are collectively equal to zero. If $R^n=b^n\phi+\mu^n$, and $R^{n+1}=b^{n+1}\phi+\mu^{n+1}$ then $R^{n+1}-R^n = (b^{n+1}-b^n)\phi + \mu^{n+1}-\mu^n$, where the μ^j are white noise. In other words if the unobserved components can be modelled as person specific fixed effects, and if $b^{n+1} = b^n$, then the residual of equation (2) is just white noise. This is a maintained assumption: it implies that the pattern of U.I. durations does not change over individuals over time.

Equation (2) is estimated by least squares using a set of regressors that are defined and described in the Appendix. A total of 28 regressors, including an intercept, make up the set of unchanging variables, $\mathbf{X}$. The choice of this set is motivated by the

need to control for non-stationarity over time - namely changes in legislation as well as macroeconomic developments - and by search theoretic determinants of the duration of unemployment spells. Corak (1992c) describes this set in more detail. The results of the regressions for both definitions of the dependent variable, the change in the number of weeks of benefits received and the change in the duration of the claim, and for both genders are also presented in the Appendix.

Table 2 presents the F-statistics for tests of the null that all of the regressors in **X** are jointly equal to zero, that is for the null of no occurrence dependence. Two regressions were undertaken for each of the four samples highlighted in table 1. The first regression pools, over individuals, all of the successive differences in adjacent U.I. spells, while the second uses only the difference in spell lengths between the first and second spells. The major reason for singling out the latter sample has to do with the possibility that any structural changes may be discrete and occur early on, during the first or second interaction with the U.I. program, rather than evolving continually with each spell.[5] In other words, the coefficients of the model may change discretely after the first encounter with the program, but remain stable thereafter. Thus, our preferred sample for a test of occurrence

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[5] This for example may be the case if an interaction with the program changes tastes, habits, or information. Further, if these changes cause successive spells to become longer and longer then much of the increase in length will occur between first and second spells if only because the maximum potential benefit weeks that an individual can collect is limited to 52 weeks by the legislation.

Table 2

F-STATISTICS FOR LEAST SQUARES REGRESSION BASED TESTS OF MEAN OCCURRENCE DEPENDENCE

Sample	Benefit Weeks Paid	Claim Duration
1. Male		
All Spells	50.1 (0.0001)	67.9 (0.0001)
First-Second Spells	7.5 (0.0001)	12.0 (0.0001)
2. Young Male		
All Spells	34.5 (0.0001)	49.8 (0.0001)
First-Second Spells	6.4 (0.0001)	8.4 (0.0001)
3. Female		
All Spells	39.9 (0.0001)	48.7 (0.0001)
First-Second Spells	12.9 (0.0001)	12.9 (0.0001)
4. Young Female		
All Spells	16.3 (0.0001)	20.3 (0.0001)
First-Second Spells	4.3 (0.0001)	4.1 (0.0001)

(.) indicates marginal significance level of an F-test with 28 degrees of freedom in the numerator of the statistic, degrees of freedom in the denominator varies with each sample.

dependence is that of the differences between first and second spells for the young, since it is only in the samples of the young that we are assured of capturing the very first U.I. spell. The F-statistics reported in table 2 suggest that the null hypothesis of no occurrence dependence is strongly rejected for all samples for both genders.

In order to offer some control for seasonal and industry specific patterns of repeat use the regressions were repeated by industry of the initial claim. The resulting F-statistics for the null of no occurrence dependence are presented in table 3 for the regressions using the difference in Benefit Weeks Paid as a regressand, and in table 4 for those using the Claim Duration. The null is rejected strongly in the majority of cases, but cannot be rejected in certain of them at a reasonable level of significance. In particular it cannot be rejected in our preferred samples for some of the service industries, and, in the case of young females, for construction.

Table 5 reports the relative lengths of successive spells, that is the ratio of t^{n+1} to t^{n}. These results are derived by exponentiating the predicted values of the dependent variable from the regressions that form the basis of table 2 and the Appendix, and by setting the values of all of the changing variables, those in the vector ΔX, to zero. This is a ceterius paribus result. It represents the change in the ratio of successive spell lengths due solely to occurrence dependence, that is to the change in the

Table 3
F-STATISTICS FOR LEAST SQUARES REGRESSION BASED TESTS OF MEAN OCCURRENCE DEPENDENCE BY INDUSTRY: BENEFIT WEEKS PAID

Sample	All Spells		First-Second Spells	
1. Males				
Agr-For-Fish	29.9	(0.0001)	5.73	(0.0001)
Mining	6.0	(0.0001)	2.86	(0.0001)
Construction	17.6	(0.0001)	3.04	(0.0001)
Non-Market Services	5.0	(0.0001)	1.26	(0.1899)
Other Services	5.8	(0.0001)	1.54	(0.0560)
Distributive Services	6.0	(0.0001)	1.61	(0.0384)
Manufacturing	10.5	(0.0001)	1.90	(0.0080)
2. Young Males				
Agr-For-Fish	21.2	(0.0001)	2.96	(0.0001)
Mining	1.5	(0.0584)	1.88	(0.0094)
Construction	14.8	(0.0001)	3.51	(0.0001)
Non-Market Services	3.0	(0.0001)	1.90	(0.0087)
Other Services	5.3	(0.0001)	1.50	(0.0673)
Distributive Services	5.2	(0.0001)	0.92	(0.5718)
Manufacturing	6.9	(0.0001)	2.05	(0.0034)
3. Females				
Agr-For-Fish	18.6	(0.0001)	4.52	(0.0001)
Mining	11.4	(0.0001)	6.66	(0.0001)
Construction	2.6	(0.0001)	1.90	(0.0131)
Non-Market Services	7.0	(0.0001)	2.47	(0.0002)
Other Services	8.9	(0.0001)	2.21	(0.0012)
Distributive Services	6.2	(0.0001)	2.74	(0.0001)
Manufacturing	9.4	(0.0001)	3.22	(0.0001)
4. Young Females				
Agr-For-Fish	8.3	(0.0001)	2.32	(0.0007)
Mining	2.1	(0.0001)	...	
Construction	2.1	(0.0001)	1.43	(0.1200)
Non-Market Services	4.8	(0.0001)	1.16	(0.2795)
Other Services	5.8	(0.0001)	1.76	(0.0178)
Distributive Services	4.1	(0.0001)	1.52	(0.0604)
Manufacturing	4.3	(0.0001)	1.82	(0.0126)

The industrial categories refer to the industry of the initial claim.

Table 4
F-STATISTICS FOR LEAST SQUARES REGRESSION BASED TESTS OF MEAN OCCURRENCE DEPENDENCE BY INDUSTRY: CLAIM DURATION

Sample	All Spells		First-Second Spells	
1. Males				
Agr-For-Fish	39.6	(0.0001)	7.91	(0.0001)
Mining	6.7	(0.0001)	2.95	(0.0001)
Construction	19.3	(0.0001)	1.71	(0.0236)
Non-Market Services	8.3	(0.0001)	1.67	(0.0298)
Other Services	11.9	(0.0001)	2.25	(0.0010)
Distributive Services	9.8	(0.0001)	2.11	(0.0023)
Manufacturing	13.8	(0.0001)	3.38	(0.0001)
2. Young Males				
Agr-For-Fish	30.2	(0.0001)	4.02	(0.0001)
Mining	1.5	(0.0639)	1.92	(0.0072)
Construction	15.6	(0.0001)	2.38	(0.0004)
Non-Market Services	4.3	(0.0001)	1.37	(0.1238)
Other Services	8.7	(0.0001)	1.75	(0.0184)
Distributive Services	7.0	(0.0001)	1.91	(0.0076)
Manufacturing	8.5	(0.0001)	2.35	(0.0005)
3. Females				
Agr-For-Fish	25.2	(0.0001)	4.76	(0.0001)
Mining	13.4	(0.0001)	8.25	(0.0001)
Construction	2.8	(0.0001)	1.47	(0.0901)
Non-Market Services	14.2	(0.0001)	1.51	(0.0648)
Other Services	10.4	(0.0001)	2.21	(0.0012)
Distributive Services	6.1	(0.0001)	2.28	(0.0008)
Manufacturing	6.7	(0.0001)	2.30	(0.0007)
4. Young Females				
Agr-For-Fish	13.5	(0.0001)	3.42	(0.0001)
Mining	1.6	(0.0445)	...	
Construction	2.3	(0.0008)	1.22	(0.2490)
Non-Market Services	7.2	(0.0001)	0.96	(0.5124)
Other Services	5.5	(0.0001)	1.52	(0.0604)
Distributive Services	4.7	(0.0001)	1.90	(0.0083)
Manufacturing	3.7	(0.0001)	1.42	(0.0976)

The industrial categories refer to the industry of the initial claim.

Table 5

RELATIVE LENGTHS OF SUCCESSIVE
UNEMPLOYMENT INSURANCE SPELL DURATIONS

Sample	Benefit Weeks Paid $\Delta X=0$	Claim Duration $\Delta X=0$
1. Male		
All Spells	1.12	1.01
First-Second Spells	1.11	1.00
2. Young Male		
All Spells	1.15	1.01
First-Second Spells	1.16	0.997
3. Female		
All Spells	1.14	1.02
First-Second Spells	1.17	1.06
4. Young Female		
All Spells	1.25	1.11
First-Second Spells	2.35	1.04

Table entries are the ratios of successive lengths of U.I. spells as calculated from the exponentation of the predicted results of the least squares regressions presented in Appendix 2. Calculations are made at the point of sample means for the non-changing regressors and with all indicator variables set to zero. $\Delta X=0$ indicates the set of results when all of the changing regressors are set to zero.

coefficients of the model.

The results for males suggest that successive U.I. spells are longer when only occurrence dependence is at play. The number of benefit weeks paid increases by 12 per cent, while the duration of the claim is unchanged. In the preferred sample of first-second spells for young males the number of benefit weeks collected is 16 per cent longer during second spells, but the claim duration of a second spell is as long as that of the first.[6]

In the case of females the number of benefit weeks paid during second spells is 17 per cent longer than first spells, and claim durations would increase slightly, by about 6 per cent. The

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[6] A reader of an earlier draft of this paper has suggested that it may not be appropriate to argue that changes in individual characteristics are exogenous, that is that $\Delta X=0$. Some of the changes in circumstances may reflect an individual's efforts to improve his or her situation, and the availability of U.I. could facilitate these efforts by permitting longer periods of search and possibly a better match between worker and employer. Accordingly the change in variables such as industry, province, CMA, student status should not necessarily be set to zero. This argument seems more directly related to the incidence of subsequent spells rather than their duration. Even so, as a response to this suggestion we derived a second set of results in which DStudent, DCMA, DQuarter, DIndustry, DRegion, and DDependents, which are described in the Appendix, are set to the their sample means while the remaining changing variables are set to zero. The results are as follows:

	Benefit Weeks Paid	Claim Duration
1. Male		
All Spells	1.08	1.02
First-Second	1.11	1.00
2. Young Male		
All Spells	1.12	1.05
First-Second	1.11	1.02
3. Female		
All Spells	1.10	1.02
First-Second	1.12	1.05
4. Young Female		
All Spells	1.23	1.16
First-Second	2.34	1.10

The differences between these results and those obtained by setting all of the changing variables to zero are not substantial: at times these are slightly lower, and at times they are slightly greater.

most notable result in table 5 is the finding that young females will collect benefits for a much longer time during their second spell: the ratio of the duration of benefit weeks collected during second spells to that of first spells is 2.35. This is a very large increase and suggests that on average this group is particularly prone to a change in labour force behaviour as a result of interacting with the program.

In general there appears to be substantial differences in the way that claimants interact with the U.I. program over time. For both genders occurrence dependence is a force that, all other things constant, will lengthen the spell. The general pattern of interaction with the program tends to be such that the number of benefit weeks paid increases substantially with each successive spell, but in which the duration of the claim remains unchanged. The implied increase in duration of benefit weeks collected by young females is particularly large. This can be interpreted as implying that with each interaction with the program a claimant collects more benefits, and spends a shorter time working while on claim.

4. CONCLUSIONS

The research reported in this paper examines the durations of successive U.I. spells reported by individuals that have had at least two U.I. claims between 1971 and 1990. The hypothesis that there is no occurrence dependence in the duration of U.I. claims is strongly rejected. The structure of the model determining the

duration of individual claims and benefit weeks paid is not stable across successive claims. Claimants tend, all other things equal, to spend a longer and longer time collecting benefits with each claim they make. The number of benefit weeks collected by young males during their second claim is estimated to be 16 per cent longer than during their first claim. In the case of young females the number of benefit weeks collected more than doubles during the second claim. Rather than weaning themselves off of U.I. use, these groups appear to be getting more and more dependent upon it.

Explaining patterns of this sort is a challenge to the existing theoretical frameworks often used to guide empirical analyses of the labour market effects of unemployment insurance. While neoclassical models of labour supply, and the temporary lay-off model of Feldstein may imply that there will be a great deal of repeat U.I. usage, they do not imply that the underlying structure determining the duration of successive spells should change.

The correct way in which to interpret the presence of occurrence dependence is not established in this paper. However, it is possible to relate this finding to the literature dealing with the "scarring" effects of unemployment. The experience of unemployment may have long-lasting consequences. It may, for example, be the case that the stigma attached to the receipt of U.I. payments is eroded by the experience of having received them. The term "stigma" should be broadly interpreted to mean a fixed cost associated with the psychological costs of receiving U.I. or

with the costs of obtaining information about the operation of the system.

It may well be that "tastes" or opportunities evolve through time in a way that is dependent upon past history. For example, the number of times the individual has collected unemployment insurance benefits may influence the predisposition to collect them in the future. In this case collecting benefits may help to erase an actual stigma that is attached to their receipt. Alternatively, interaction with the program may lead individuals to become more informed about program parameters and the ease with which benefits may be collected. In either case, the greater the number of past occurrences of unemployment insurance benefit receipt, the greater the probability and the duration of future receipt. Hypotheses of this sort may prove to offer a fruitful avenue for future research.

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Table A-1

DEFINITIONS OF VARIABLES USED IN REGRESSION ANALYSIS OF OCCURRENCE DEPENDENCE

MNEMONIC	DEFINITION
Age/10	- Age in years when claim was initiated divided by ten
$(Age/10)^2$	- Age/10 squared
$(Age/10)^3$	- Age/10 cubed
Dependents	- One if claimant had dependents, zero otherwise
Student	- One if claimant was a student, zero otherwise
CMA	- One if claimant resided in a Census Metropolitan Area, zero otherwise
2nd Quarter	- One if claim was initiated in second quarter of the year, zero otherwise
3rd Quarter	- One if claim was initiated in third quarter of the year, zero otherwise
4th Quarter	- One if claim was initiated in fourth quarter of the year, zero otherwise
Ag-For-Fsh	- One if claimant worked in Agriculture, Forestry, or Fishing (1980 SIC Codes 011 to 033), zero otherwise
Mining	- One if claimant worked in Mining (1980 SIC Codes 061 to 92), zero otherwise
Construction	- One if claimant worked in Construction (1980 SIC Codes 401 to 429 and 441 to 449), zero otherwise
Distrib Serv	- One if claimant worked in Distributive Services (1980 SIC Codes 451 to 692), zero otherwise
Non-Mrkt Serv	- One if claimant worked in Non-Market Services (1980 SIC Codes 811 to 869, and 981), zero otherwise
Other Services	- One if claimant worked in Other Services (SIC Codes 701 to 779, 961 to 999), zero otherwise
Nfld	- One if claimant resided in Newfoundland, zero otherwise
Maritimes	- One if claimant resided in Prince Edward Island, Nova Scotia, or New Brunswick, zero otherwise
Quebec	- One if claimant resided in Quebec, zero otherwise
Man-Sask	- One if claimant resided in Manitoba or Saskatchewan, zero otherwise
Alberta	- One if claimant resided in Alberta, zero otherwise
BC	- One if claimant resided in British Columbia, zero otherwise
BE Rate	- Amount of weekly unemployment insurance payments divided by weekly insured earnings
BE Rate OverMax	- BE Rate if insured earnings exceed maximum insured earnings, zero otherwise
Maximum Benefit Weeks	- Number of Weeks of Benefit eligibility

Table A-1 (concluded)

DEFINITIONS OF VARIABLES USED IN REGRESSION ANALYSIS OF OCCURRENCE DEPENDENCE

MNEMONIC	DEFINITION
Supplementary Inc	- One if claimant received supplementary unemployment insurance benefits or pension income, zero otherwise
FourWeek	- One if claim was adjudicated during the period in which the "Four Week Rule" applied (December 1973 through September 1977), zero otherwise
U Rate	- Regional unemployment rate at beginning of the claim
DAge	- Age/10 during n+1 spell less Age/10 during nth spell
$DAge^2$	- $(Age/10)^2$ during n+1 spell less $(Age/10)^2$ during nth spell
$DAge^3$	- $(Age/10)^3$ during n+1 spell less $(Age/10)^3$ during nth spell
DDependents	- One if Dependents changes between n+1 and nth spell, zero otherwise
DStudent	- One if Student changes between n+1 and nth spell, zero otherwise
DCMA	- One if CMA changes between n+1 and nth spell, zero, otherwise
DQuarter	- One if 2nd Quarter, 3rd Quarter, or 4th Quarter changes between n+1 and nth spell, zero otherwise
DIndustry	- One if Ag-For-Fsh, Mining, Construction, Non-Mrkt Services, Other Services, or Distrib Services changes between n+1 and nth spell, zero otherwise
DRegion	- One if Nfld, Maritimes, Quebec, Man-Sask, Alberta, or BC changes between n+1 and nth spell, zero otherwise
DBE Rate	- BE Rate for n+1 spell less BE Rate for nth spell
DMax Benefit Wks	- Maximum Benefit Weeks for n+1 spell less Maximum Benefit Weeks for nth spell
DBE Rate OverMax	- Ben-OverMax for n+1 spell less Ben-OverMax for nth spell
DSup Inc	- One if Supplementary Inc changes between n+1 and nth spell, zero otherwise
DFour Week	- One if FourWeek changes between n+1 and nth spell, zero otherwise
DU Rate	- U Rate for n+1 spell less U Rate for nth spell

Table A-2

LEAST SQUARES REGRESSION TESTS OF MEAN OCCURRENCE DEPENDENCE
MALE SUBSAMPLE, BENEFIT WEEKS PAID

	ALL SPELLS		FIRST-SECOND SPELLS	
Intercept	-0.697	(0.0001)	-0.348	(0.2696)
Age/10	-0.541	(0.0001)	-0.518	(0.0001)
$(Age/10)^2$	0.146	(0.0001)	0.147	(0.0001)
$(Age/10)^3$	-0.0122	(0.0001)	-0.0128	(0.0001)
Dependents	-0.0741	(0.0001)	-0.0381	(0.0220)
Student	0.00508	(0.5881)	0.0330	(0.2028)
CMA	0.0274	(0.0001)	0.00561	(0.6819)
2nd Quarter	-0.0310	(0.0004)	-0.0187	(0.2930)
3rd Quarter	-0.108	(0.0001)	-0.0809	(0.0001)
4th Quarter	-0.116	(0.0001)	-0.132	(0.0001)
Ag-For-Fsh	-0.0861	(0.0001)	-0.0456	(0.1034)
Mining	-0.0790	(0.0001)	-0.0362	(0.2331)
Construction	-0.0521	(0.0001)	0.00342	(0.9128)
Non-Mrkt Services	-0.0369	(0.0037)	-0.0313	(0.3687)
Other Services	-0.0306	(0.0086)	-0.0211	(0.4587)
Distrib Services	-0.0230	(0.0322)	-0.00907	(0.7279)
Nfld	0.0304	(0.0582)	0.0620	(0.1639)
Maritimes	-0.00999	(0.3716)	-0.0116	(0.6701)
Quebec	-0.0222	(0.0088)	-0.0170	(0.3688)
Manitoba-Sask	0.0123	(0.3469)	0.00612	(0.8231)
Alberta	0.0418	(0.0011)	0.0215	(0.4103)
BC	0.00103	(0.9226)	0.0339	(0.1424)
BE Rate	1.57	(0.0001)	1.06	(0.0142)
BE Rate-OverMax	-0.0536	(0.0030)	-0.0209	(0.5394)
Maximum Benefit Wks	0.0130	(0.0001)	0.0108	(0.0001)
Supplemenary Inc	-0.0468	(0.0365)	-0.112	(0.1184)
Four Week	0.0630	(0.0001)	0.0150	(0.5650)
U Rate	-0.00925	(0.0001)	-0.0131	(0.0001)
$DAge$	-1.64	(0.0001)	-1.71	(0.0001)
$DAge^2$	0.380	(0.0001)	0.437	(0.0001)
$DAge^3$	-0.0277	(0.0001)	-0.0335	(0.0001)
DDependents	0.0173	(0.0093)	-0.0217	(0.1666)
DStudent	-0.00803	(0.4318)	-0.0294	(0.2295)
DCMA	0.0630	(0.0001)	0.0552	(0.0028)
DQuarter	-0.00859	(0.1426)	-0.00836	(0.5224)
DIndustry	-0.0886	(0.0001)	-0.0843	(0.0001)
DRegion	0.0772	(0.0001)	0.0629	(0.0367)
DBE Rate	-1.02	(0.0001)	-1.62	(0.0001)
DMax Benefit Wks	0.0267	(0.0001)	0.0246	(0.0001)
DBE Rate OverMax	0.205	(0.0001)	0.189	(0.0001)
DSup Inc	0.0389	(0.0133)	0.0661	(0.1099)
DFour Week	-0.133	(0.0001)	-0.129	(0.0001)
DU Rate	0.0145	(0.0001)	0.0215	(0.0001)
R^2	0.0512		0.0537	
N	142,912		36,891	
F (43)	183.4	(0.0001)	49.8	(0.0001)
F (28)	50.1	(0.0001)	7.53	(0.0001)

(x.xxxx) indicates the marginal significance level.

Table A-3

LEAST SQUARES REGRESSION TESTS OF MEAN OCCURRENCE DEPENDENCE
MALE SUBSAMPLE, DURATION OF CLAIM

	ALL SPELLS		FIRST-SECOND SPELLS	
Intercept	-0.842	(0.0001)	-0.430	(0.1078)
Age/10	-0.628	(0.0001)	-0.813	(0.0001)
$(Age/10)^2$	0.187	(0.0001)	0.253	(0.0001)
$(Age/10)^3$	-0.0170	(0.0001)	-0.0238	(0.0001)
Dependents	-0.0791	(0.0001)	-0.0330	(0.0195)
Student	-0.0219	(0.0065)	-0.0194	(0.3786)
CMA	0.0188	(0.0005)	0.0177	(0.1282)
2nd Quarter	-0.0319	(0.0001)	-0.0300	(0.0459)
3rd Quarter	-0.0755	(0.0001)	-0.0528	(0.0006)
4th Quarter	-0.0282	(0.0001)	-0.0546	(0.0001)
Ag-For-Fsh	-0.0580	(0.0001)	-0.0132	(0.5780)
Mining	-0.0661	(0.0001)	-0.0178	(0.4886)
Construction	-0.0109	(0.2100)	0.0230	(0.3853)
Non-Mrkt Services	-0.00943	(0.3870)	0.0101	(0.7318)
Other Services	-0.00311	(0.7556)	0.0160	(0.5071)
Distrib Services	0.00373	(0.6858)	0.0101	(0.6467)
Nfld	0.0163	(0.2366)	0.0298	(0.4302)
Maritimes	0.000248	(0.9794)	0.00216	(0.9255)
Quebec	-0.00696	(0.3373)	0.0193	(0.2269)
Manitoba-Sask	0.0129	(0.2506)	0.0135	(0.5623)
Alberta	0.0299	(0.0067)	0.00335	(0.8795)
BC	-0.00739	(0.4156)	0.0113	(0.5655)
BE Rate	1.80	(0.0001)	1.44	(0.0001)
BE Rate-OverMax	-0.0713	(0.0001)	-0.0466	(0.1058)
Maximum Benefit Wks	0.00975	(0.0001)	0.00950	(0.0001)
Supplemenary Inc	-0.251	(0.0001)	-0.380	(0.0001)
Four Week	0.0925	(0.0001)	0.0130	(0.5566)
U Rate	-0.00346	(0.0005)	-0.00960	(0.0004)
$DAge_2$	-1.15	(0.0001)	-1.16	(0.0001)
$DAge_3$	0.304	(0.0001)	0.340	(0.0001)
$DAge^3$	-0.0254	(0.0001)	-0.0296	(0.0001)
DDependents	0.0321	(0.0001)	-0.00851	(0.5225)
DStudent	0.0150	(0.0860)	0.0275	(0.1840)
DCMA	0.0768	(0.0001)	0.0570	(0.0003)
DQuarter	0.0598	(0.0001)	0.0462	(0.0001)
DIndustry	-0.0764	(0.0001)	-0.0851	(0.0001)
DRegion	0.0750	(0.0001)	0.0466	(0.0680)
DBE Rate	-0.700	(0.0001)	-1.18	(0.0003)
DMax Benefit Wks	0.0245	(0.0001)	0.0239	(0.0001)
DBE Rate OverMax	0.155	(0.0001)	0.151	(0.0001)
DSup Inc	0.106	(0.0001)	0.161	(0.0001)
DFour Week	-0.181	(0.0001)	-0.184	(0.0001)
DU Rate	0.00957	(0.0001)	0.0138	(0.0001)
R^2	0.0680		0.0743	
N	142,912		36,891	
F (43)	248.1	(0.0001)	70.4	(0.0001)
F (28)	67.9	(0.0001)	12.0	(0.0001)

(x.xxxx) indicates the marginal significance level.

Table A-4

LEAST SQUARES REGRESSION TESTS OF MEAN OCCURRENCE DEPENDENCE YOUNG MALE SUBSAMPLE, BENEFIT WEEKS PAID

	ALL SPELLS		FIRST-SECOND SPELLS	
Intercept	2.62	(0.0013)	2.89	(0.0190)
$Age/10$	-3.10	(0.0019)	-1.76	(0.2713)
$(Age/10)^2$	1.47	(0.0007)	0.628	(0.4106)
$(Age/10)^3$	-0.241	(0.0001)	-0.0834	(0.4905)
Dependents	-0.348	(0.0001)	-0.293	(0.0001)
Student	0.0108	(0.4796)	0.0268	(0.3895)
CMA	0.0331	(0.0030)	0.0116	(0.5740)
2nd Quarter	-0.0115	(0.4472)	0.0294	(0.2825)
3rd Quarter	-0.106	(0.0001)	-0.0813	(0.0035)
4th Quarter	-0.117	(0.0001)	-0.133	(0.0001)
Ag-For-Fsh	-0.0849	(0.0001)	-0.0819	(0.0250)
Mining	-0.0772	(0.0020)	-0.106	(0.0156)
Construction	-0.0536	(0.0012)	0.0108	(0.7697)
Non-Mrkt Services	-0.0230	(0.1409)	-0.00399	(0.9238)
Other Services	-0.0377	(0.0317)	-0.0416	(0.2155)
Distrib Services	-0.00873	(0.5865)	-0.00977	(0.7534)
Nfld	0.0444	(0.1080)	0.0115	(0.8469)
Maritimes	0.0230	(0.2387)	0.00565	(0.8857)
Quebec	-0.0197	(0.1910)	-0.00828	(0.7690)
Manitoba-Sask	0.0486	(0.0243)	0.0990	(0.0110)
Alberta	0.0584	(0.0062)	0.0536	(0.1598)
BC	0.00327	(0.8646)	0.0691	(0.0497)
BE Rate	-0.884	(0.0394)	-1.99	(0.0037)
BE Rate-OverMax	-0.0822	(0.0381)	-0.207	(0.0005)
Maximum Benefit Wks	0.00996	(0.0001)	0.00732	(0.0003)
Supplemenary Inc	0.0142	(0.6823)	0.0435	(0.6032)
Four Week	0.116	(0.0030)	0.115	(0.0427)
U Rate	-0.00792	(0.0001)	-0.00631	(0.1261)
$DAge$	-2.20	(0.0001)	-3.58	(0.0001)
$DAge^2$	0.416	(0.0001)	0.831	(0.0001)
$DAge^3$	-0.0222	(0.0001)	-0.0515	(0.0001)
DDependents	0.0873	(0.0001)	0.0231	(0.3827)
DStudent	0.0354	(0.0418)	0.0303	(0.3557)
DCMA	0.0711	(0.0001)	0.0762	(0.0100)
DQuarter	-0.0300	(0.0038)	-0.0354	(0.0716)
DIndustry	-0.0884	(0.0001)	-0.0824	(0.0001)
DRegion	0.0692	(0.0077)	0.0596	(0.1774)
DBE Rate	-2.75	(0.0001)	-4.05	(0.0001)
DMax Benefit Wks	0.0269	(0.0001)	0.0250	(0.0001)
DBE Rate OverMax	0.213	(0.0001)	0.112	(0.0322)
DSup Inc	0.00723	(0.7658)	-0.0610	(0.2495)
DFour Week	-0.186	(0.0001)	-0.191	(0.0001)
DU Rate	0.0152	(0.0001)	0.0210	(0.0001)
R^2	0.0631		0.0631	
N	46,290		14,993	
F (43)	74.2	(0.0001)	24.0	(0.0001)
F (28)	35.5	(0.0001)	6.41	(0.0001)

(x.xxxx) indicates the marginal significance level.

Table A-5

LEAST SQUARES REGRESSION TESTS OF MEAN OCCURRENCE DEPENDENCE
YOUNG MALE SUBSAMPLE, DURATION OF CLAIM

	ALL SPELLS		FIRST-SECOND SPELLS	
Intercept	2.47	(0.0003)	2.31	(0.0252)
Age/10	-2.88	(0.0006)	-1.40	(0.2992)
$(Age/10)^2$	1.37	(0.0002)	0.486	(0.4475)
$(Age/10)^3$	-0.221	(0.0001)	-0.0661	(0.5147)
Dependents	-0.359	(0.0001)	-0.329	(0.0001)
Student	-0.00380	(0.7682)	-0.0193	(0.4611)
CMA	0.0283	(0.0027)	0.0321	(0.0633)
2nd Quarter	-0.0199	(0.1183)	0.0140	(0.5412)
3rd Quarter	-0.0762	(0.0001)	-0.0412	(0.0775)
4th Quarter	-0.0300	(0.0044)	-0.0346	(0.0884)
Ag-For-Fsh	-0.0786	(0.0001)	-0.0911	(0.0029)
Mining	-0.0763	(0.0003)	-0.110	(0.0030)
Construction	-0.0256	(0.0678)	0.00409	(0.8946)
Non-Mrkt Services	-0.00973	(0.5713)	0.0204	(0.5593)
Other Services	-0.0238	(0.1074)	-0.0235	(0.4049)
Distrib Services	-0.00437	(0.7469)	-0.0195	(0.4548)
Nfld	0.0110	(0.6362)	-0.0200	(0.6897)
Maritimes	0.0200	(0.2264)	0.0237	(0.4722)
Quebec	-0.0119	(0.3486)	-0.00419	(0.8593)
Manitoba-Sask	0.0433	(0.0174)	0.0873	(0.0075)
Alberta	0.0304	(0.0912)	0.0445	(0.1640)
BC	-0.0122	(0.4509)	0.0230	(0.4365)
BE Rate	-1.09	(0.0027)	-1.87	(0.0012)
BE Rate-OverMax	-0.0625	(0.0620)	-0.182	(0.0002)
Maximum Benefit Wks	0.00710	(0.0001)	0.00719	(0.0001)
Supplemenary Inc	-0.259	(0.0001)	-0.312	(0.0001)
Four Week	0.165	(0.0001)	0.142	(0.0028)
U Rate	-0.000243	(0.8822)	-0.00256	(0.4598)
$DAge_2$	-1.63	(0.0001)	-2.37	(0.0001)
$DAge^2$	0.305	(0.0001)	0.527	(0.0001)
$DAge^3$	-0.0163	(0.0001)	-0.0320	(0.0001)
DDependents	0.0104	(0.0001)	0.0600	(0.0068)
DStudent	0.0324	(0.0270)	0.0572	(0.0378)
DCMA	0.0713	(0.0001)	0.0684	(0.0058)
DQuarter	0.0633	(0.0001)	0.0656	(0.0001)
DIndustry	-0.0653	(0.0001)	-0.0846	(0.0001)
DRegion	0.0699	(0.0014)	0.0547	(0.1402)
DBE Rate	-3.13	(0.0001)	-3.79	(0.0001)
DMax Benefit Wks	0.0243	(0.0001)	0.0248	(0.0001)
DBE Rate OverMax	0.154	(0.0001)	0.0702	(0.1089)
DSup Inc	0.121	(0.0001)	0.108	(0.0154)
DFour Week	-0.243	(0.0001)	-0.268	(0.0001)
DU Rate	0.0117	(0.0001)	0.0145	(0.0001)
R^2	0.0785		0.0847	
N	46,290		14,993	
F (43)	93.8	(0.0001)	32.9	(0.0001)
F (28)	49.8	(0.0001)	8.38	(0.0001)

(x.xxxx) indicates the marginal significance level.

Table A-6

LEAST SQUARES REGRESSION TESTS OF MEAN OCCURRENCE DEPENDENCE
FEMALE SUBSAMPLE, BENEFIT WEEKS PAID

	ALL SPELLS		FIRST-SECOND SPELLS	
Intercept	-0.293	(0.1599)	-0.662	(0.0552)
Age/10	-0.866	(0.0001)	-0.710	(0.0001)
$(Age/10)^2$	0.206	(0.0001)	0.174	(0.0001)
$(Age/10)^3$	-0.0157	(0.0001)	-0.0138	(0.0001)
Dependents	-0.127	(0.0001)	-0.0379	(0.0836)
Student	-0.0289	(0.0439)	-0.00340	(0.9080)
CMA	0.0471	(0.0001)	0.0503	(0.0003)
2nd Quarter	0.0137	(0.1825)	0.0344	(0.0480)
3rd Quarter	-0.0121	(0.2469)	-0.00147	(0.9345)
4th Quarter	-0.0504	(0.0001)	-0.0336	(0.0634)
Ag-For-Fsh	-0.0854	(0.0001)	-0.0768	(0.0229)
Mining	-0.0601	(0.0007)	-0.0399	(0.2421)
Construction	-0.0298	(0.3816)	0.0893	(0.2522)
Non-Mrkt Services	-0.0783	(0.0001)	-0.0559	(0.0576)
Other Services	-0.0383	(0.0039)	-0.0323	(0.2513)
Distrib Services	-0.0251	(0.0856)	-0.0491	(0.1042)
Nfld	-0.0313	(0.1851)	0.0120	(0.8053)
Maritimes	-0.0520	(0.0006)	0.0110	(0.7015)
Quebec	-0.0536	(0.0001)	-0.00515	(0.7864)
Manitoba-Sask	-0.0148	(0.3974)	-0.0325	(0.2467)
Alberta	0.0236	(0.1688)	0.0304	(0.2565)
BC	-0.0210	(0.1271)	0.00363	(0.8789)
BE Rate	1.56	(0.0001)	1.91	(0.0001)
BE Rate-OverMax	0.0552	(0.0029)	0.0972	(0.0033)
Maximum Benefit Wks	0.0159	(0.0001)	0.0145	(0.0001)
Supplemenary Inc	-0.0568	(0.0437)	-0.0712	(0.3285)
Four Week	0.0177	(0.3785)	-0.0169	(0.5668)
U Rate	-0.0118	(0.0001)	-0.0180	(0.0001)
$DAge$	-1.18	(0.0001)	-0.933	(0.0001)
$DAge^2$	0.217	(0.0001)	0.179	(0.0003)
$DAge^3$	-0.0151	(0.0001)	-0.0133	(0.0005)
DDependents	0.0217	(0.0118)	0.0166	(0.3058)
DStudent	-0.00191	(0.8960)	0.00373	(0.8875)
DCMA	0.0926	(0.0001)	0.0781	(0.0001)
DQuarter	-0.00844	(0.2646)	-0.0176	(0.1946)
DIndustry	-0.126	(0.0001)	-0.107	(0.0001)
DRegion	0.0918	(0.0001)	0.0863	(0.0024)
DBE Rate	0.0897	(0.7080)	0.614	(0.1056)
DMax Benefit Wks	0.0272	(0.0001)	0.0271	(0.0001)
DBE Rate OverMax	0.306	(0.0001)	0.313	(0.0001)
DSup Inc	0.0135	(0.4645)	0.0412	(0.2771)
DFour Week	-0.170	(0.0001)	-0.184	(0.0001)
DU Rate	0.00783	(0.0001)	0.00244	(0.3400)
R^2	0.0516		0.0484	
N	87,106		32,368	
F (43)	112.9	(0.0001)	39.2	(0.0001)
F (28)	39.9	(0.0001)	12.9	(0.0001)

(x.xxxx) indicates the marginal significance level.

Table A-7

LEAST SQUARES REGRESSION TESTS OF MEAN OCCURRENCE DEPENDENCE
FEMALE SUBSAMPLE, DURATION OF CLAIM

	ALL SPELLS		FIRST-SECOND SPELLS	
Intercept	-0.630	(0.0003)	-0.661	(0.0198)
Age/10	-0.888	(0.0001)	-0.800	(0.0001)
$(Age/10)^2$	0.235	(0.0001)	0.222	(0.0001)
$(Age/10)^3$	-0.0199	(0.0001)	-0.0196	(0.0001)
Dependents	-0.142	(0.0001)	-0.0320	(0.0753)
Student	-0.0307	(0.0102)	-0.0116	(0.6325)
CMA	0.0346	(0.0001)	0.0434	(0.0002)
2nd Quarter	0.0162	(0.0585)	0.0224	(0.1165)
3rd Quarter	-0.0108	(0.2133)	-0.00885	(0.5470)
4th Quarter	-0.0190	(0.0287)	-0.0136	(0.3612)
Ag-For-Fsh	-0.0675	(0.0001)	-0.0233	(0.3999)
Mining	-0.0583	(0.0001)	-0.00382	(0.8916)
Construction	0.00931	(0.7426)	0.105	(0.0997)
Non-Mrkt Services	-0.0485	(0.0001)	-0.0327	(0.1764)
Other Services	-0.0185	(0.0941)	-0.0185	(0.4234)
Distrib Services	-0.00653	(0.5906)	-0.0142	(0.5661)
Nfld	-0.0324	(0.0993)	-0.00209	(0.9582)
Maritimes	-0.0374	(0.0029)	0.0174	(0.4587)
Quebec	-0.0403	(0.0001)	0.0125	(0.4222)
Manitoba-Sask	-0.0197	(0.1754)	-0.0233	(0.3124)
Alberta	0.0116	(0.4157)	0.0333	(0.1303)
BC	-0.0282	(0.0138)	0.00445	(0.8202)
BE Rate	2.00	(0.0001)	1.84	(0.0001)
BE Rate-OverMax	0.0162	(0.2944)	0.0408	(0.1331)
Maximum Benefit Wks	0.0126	(0.0001)	0.0124	(0.0001)
Supplemenary Inc	-0.299	(0.0001)	-0.327	(0.0001)
Four Week	0.0221	(0.1866)	-0.0285	(0.2403)
U Rate	-0.00585	(0.0001)	-0.0113	(0.0001)
$DAge_2$	-1.29	(0.0001)	-1.15	(0.0001)
$DAge_3$	0.292	(0.0001)	0.268	(0.0001)
$DAge^3$	-0.0235	(0.0001)	-0.0223	(0.0001)
DDependents	0.0408	(0.0001)	0.0213	(0.1089)
DStudent	0.00704	(0.5641)	0.0191	(0.3769)
DCMA	0.0957	(0.0001)	0.0893	(0.0001)
DQuarter	0.0461	(0.0001)	0.0317	(0.0045)
DIndustry	-0.110	(0.0001)	-0.102	(0.0001)
DRegion	0.0763	(0.0001)	0.0824	(0.0004)
DBE Rate	0.543	(0.0064)	0.606	(0.0522)
DMax Benefit Wks	0.0244	(0.0001)	0.0247	(0.0001)
DBE Rate OverMax	0.203	(0.0001)	0.207	(0.0001)
DSup Inc	0.103	(0.0001)	0.133	(0.0001)
DFour Week	-0.203	(0.0001)	-0.215	(0.0001)
DU Rate	0.00775	(0.0001)	0.00179	(0.3959)
R^2	0.0665		0.0630	
N	87,106		32,368	
F (43)	147.6	(0.0001)	51.8	(0.0001)
F (28)	48.7	(0.0001)	12.9	(0.0001)

(x.xxxx) indicates the marginal significance level.

Table A-8

LEAST SQUARES REGRESSION TESTS OF MEAN OCCURRENCE DEPENDENCE
YOUNG FEMALE SUBSAMPLE, BENEFIT WEEKS PAID

	ALL SPELLS		FIRST-SECOND SPELLS	
Intercept	1.55	(0.2848)	3.15	(0.1784)
$Age/10$	-3.50	(0.0459)	-6.36	(0.0345)
$(Age/10)^2$	1.69	(0.0242)	3.07	(0.0225)
$(Age/10)^3$	-0.274	(0.0098)	-0.491	(0.0137)
Dependents	-0.215	(0.0001)	-0.115	(0.0030)
Student	0.00622	(0.7892)	0.0555	(0.1655)
CMA	0.0542	(0.0003)	0.0664	(0.0037)
2nd Quarter	0.0130	(0.4731)	0.0195	(0.4925)
3rd Quarter	-0.0498	(0.0068)	-0.0405	(0.1656)
4th Quarter	-0.0819	(0.0001)	-0.0670	(0.0215)
Ag-For-Fsh	-0.0714	(0.0102)	-0.123	(0.0126)
Mining	-0.0563	(0.1468)	-0.115	(0.0446)
Construction	-0.0793	(0.1459)	0.0376	(0.7059)
Non-Mrkt Services	-0.0406	(0.0749)	-0.0440	(0.2685)
Other Services	-0.00495	(0.8147)	0.00289	(0.9361)
Distrib Services	0.00445	(0.8483)	-0.0216	(0.5765)
Nfld	-0.0808	(0.0455)	-0.0752	(0.2895)
Maritimes	-0.0894	(0.0011)	-0.0279	(0.5393)
Quebec	-0.0101	(0.0001)	-0.0461	(0.1338)
Manitoba-Sask	-0.0474	(0.1192)	-0.0604	(0.1659)
Alberta	0.00711	(0.8107)	0.0271	(0.5224)
BC	-0.0328	(0.1934)	-0.0115	(0.7706)
BE Rate	0.838	(0.1979)	1.67	(0.0600)
BE Rate-OverMax	0.162	(0.0001)	0.178	(0.0020)
Maximum Benefit Wks	0.0141	(0.0001)	0.00896	(0.0002)
Supplemenary Inc	0.00921	(0.8344)	0.0316	(0.7184)
Four Week	0.110	(0.0723)	0.125	(0.1087)
U Rate	-0.0111	(0.0001)	-0.0108	(0.0216)
$DAge_2$	-0.584	(0.4260)	-1.38	(0.2688)
$DAge_2^2$	-0.0564	(0.8083)	0.226	(0.5944)
$DAge^3$	0.0184	(0.4276)	-0.00703	(0.8801)
DDependents	0.0365	(0.0171)	0.00910	(0.7234)
DStudent	-0.0224	(0.3674)	-0.0491	(0.2188)
DCMA	0.107	(0.0001)	0.0918	(0.0027)
DQuarter	0.0132	(0.3343)	0.00847	(0.7020)
DIndustry	-0.100	(0.0001)	-0.0514	(0.0225)
DRegion	0.0818	(0.0087)	0.123	(0.0056)
DBE Rate	-0.944	(0.1251)	-0.422	(0.6059)
DMax Benefit Wks	0.0277	(0.0001)	0.0269	(0.0001)
DBE Rate OverMax	0.437	(0.0001)	0.386	(0.0001)
DSup Inc	-0.0200	(0.4900)	0.00982	(0.8454)
DFour Week	-0.143	(0.0069)	-0.116	(0.0711)
DU Rate	0.00823	(0.0008)	0.00296	(0.4554)
R^2	0.0591		0.0521	
N	27,586		12,001	
F (43)	41.2	(0.0001)	15.7	(0.0001)
F (28)	16.3	(0.0001)	4.29	(0.0001)

(x.xxxx) indicates the marginal significance level.

Table A-9

LEAST SQUARES REGRESSION TESTS OF MEAN OCCURRENCE DEPENDENCE
YOUNG FEMALE SUBSAMPLE, DURATION OF CLAIM

	ALL SPELLS		FIRST-SECOND SPELLS	
Intercept	3.58	(0.0023)	6.76	(0.0003)
Age/10	-6.03	(0.0001)	-10.7	(0.0001)
$(Age/10)^2$	2.76	(0.0001)	4.97	(0.0001)
$(Age/10)^3$	-0.420	(0.0001)	-0.754	(0.0001)
Dependents	-0.229	(0.0001)	-0.111	(0.0004)
Student	0.000498	(0.9790)	0.0505	(0.1182)
CMA	0.0409	(0.0007)	0.0564	(0.0023)
2nd Quarter	0.00223	(0.8802)	-0.00485	(0.8319)
3rd Quarter	-0.0446	(0.0028)	-0.0461	(0.0506)
4th Quarter	-0.0499	(0.0009)	-0.0495	(0.0352)
Ag-For-Fsh	-0.0718	(0.0015)	-0.0882	(0.0269)
Mining	-0.0577	(0.0674)	-0.0845	(0.0662)
Construction	-0.0256	(0.5635)	0.0425	(0.5969)
Non-Mrkt Services	-0.0348	(0.0601)	-0.0340	(0.2893)
Other Services	-0.000323	(0.9850)	0.00705	(0.8083)
Distrib Services	0.0130	(0.4930)	0.0211	(0.4991)
Nfld	-0.0845	(0.0101)	-0.0840	(0.1429)
Maritimes	-0.0740	(0.0009)	-0.0270	(0.4615)
Quebec	-0.0854	(0.0001)	-0.0335	(0.1769)
Manitoba-Sask	-0.0557	(0.0242)	-0.0505	(0.1511)
Alberta	-0.00219	(0.9277)	0.0279	(0.4146)
BC	-0.0512	(0.0125)	-0.0119	(0.7083)
BE Rate	0.667	(0.2076)	1.06	(0.1391)
BE Rate-OverMax	0.125	(0.0001)	0.122	(0.0084)
Maximum Benefit Wks	0.0102	(0.0001)	0.00728	(0.0002)
Supplemenary Inc	-0.238	(0.0001)	-0.213	(0.0027)
Four Week	0.118	(0.0180)	0.125	(0.0465)
U Rate	-0.00334	(0.1362)	-0.00378	(0.3174)
$DAge_2$	-0.781	(0.1904)	-0.915	(0.3616)
$DAge_3$	0.0361	(0.8485)	0.0831	(0.8081)
$DAge^3$	0.00851	(0.6511)	0.00692	(0.8541)
DDependents	0.0579	(0.0001)	0.0101	(0.6261)
DStudent	-0.00422	(0.8347)	-0.0131	(0.6851)
DCMA	0.107	(0.0001)	0.107	(0.0001)
DQuarter	0.0842	(0.0001)	0.0899	(0.0001)
DIndustry	-0.0888	(0.0001)	-0.0630	(0.0005)
DRegion	0.0887	(0.0005)	0.128	(0.0004)
DBE Rate	-0.932	(0.0624)	-0.714	(0.2789)
DMax Benefit Wks	0.0247	(0.0001)	0.0246	(0.0001)
DBE Rate OverMax	0.302	(0.0001)	0.255	(0.0001)
DSup Inc	0.0876	(0.0002)	0.102	(0.0123)
DFour Week	-0.208	(0.0001)	-0.198	(0.0001)
DU Rate	0.00837	(0.0001)	0.00209	(0.5126)
R^2	0.0744		0.0702	
N	27,586		12,001	
F (43)	52.7	(0.0001)	21.5	(0.0001)
F (28)	20.3	(0.0001)	4.09	(0.0001)

(x.xxxx) indicates the marginal significance level.

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